

remaining chapters of the volume, geologists will be glad to have brought together the results of the author's extensive study and exceptionally wide experience. While every one will be glad to see the excellent use which has been made of the splendid researches of Delesse and Daubrée, it might perhaps have been better if the author had relied less implicitly upon some others among the older school of French geologists. All will look forward with interest to the appearance of the second and concluding volume of the work, which will treat of stratigraphical geology, and the broader and more theoretical aspects of the science.

The present volume is worthy of the University Press, from which it is issued: well printed upon excellent paper, and illustrated by numerous woodcuts; these have been derived from other standard works, or are founded on sketches by the late Dr. Buckland, while not a few of them bear testimony to the fact that recent publications, like those of the U.S. Geological Survey of the Territories, have been freely placed under contribution; the general appearance of the book is all that could be desired. Among the six excellent folding plates, the first place must be assigned to the beautiful reproduction, on a small scale, of Marcou's geological map of the world, which has been revised by its author for the present work.

We cannot better conclude this notice of a very important contribution to geological literature than by quoting the sentences in which the author himself defines his position towards the different schools of geological thought.

"The fundamental question of *time* and *force* has given rise to two schools, one of which adopts uniformity of action in all time,—while the other considers that the physical forces were more active and energetic in geological periods than at present.

"On the Continent and in America the latter view prevails, but in this country the theory of uniformity has been more generally held and taught. To this theory I have always seen very grave objections; so I felt I should be supplying a want by placing before the student the views of a school which, until of late, has hardly had its exponent in English text-books.

"The eloquence and ability with which uniformitarianism has been advocated, furthered by the palpable objections to the extreme views held by some eminent geologists of the other school, led in England to its very wide acceptance. But it must be borne in mind that uniformitarian doctrines have probably been carried further by his followers than by their distinguished advocate, Sir Charles Lyell, and also that the doctrine of non-uniformity must not be confounded with a blind reliance in catastrophes; nor does it, as might be supposed from the tone of some of its opponents, involve any questions respecting uniformity of law, but only those respecting uniformity of action.

"I myself have long been led to conclude that the phenomena of geology, so far from showing uniformity of action in all time, present an unceasing series of changes dependent upon the circumstances of the time; and that, while the laws of chemistry and physics are unchangeable and as permanent as the material universe itself, the exhibition of the consequences of those laws in their operation on the earth has been, as new conditions and new combinations successively arose in the course of its long geological history, one of constant variation in degree and intensity of action."

Extreme Catastrophists—if indeed any such have escaped extinction during the evolution of modern geo-

logical philosophy—will find little in the way of comfort in the above sentences, or indeed in any part of the volume before us. The most pronounced Uniformitarian, on the other hand, will find equally little to take exception to in the general tone of Prof. Prestwich's conclusions; he will perhaps only ask that before recourse is had to non-uniformity in the action of existing causes, the incompetency of the uniform action of those causes to produce any particular phenomena shall be distinctly demonstrated.

### THE PICTORIAL ARTS OF JAPAN

*The Pictorial Arts of Japan.* With 80 Plates and Chromolithographs, and numerous Engravings on Wood and Copper, and with General and Descriptive Text. By W. Anderson, F.R.C.S., late Medical Officer H.M. Legation in Japan. To be complete in 4 parts. Part I. General History. (London: Sampson Low, 1886.)

OF the aboriginal inhabitants of Japan we know but little. A Polynesian element with some Melanesian admixture probably predominated in the southern, as an Aino element did in the northern, islands. Of the latter race the shell-mounds that line the coasts of the main island have afforded many interesting relics, among others fragments of pottery showing a simple ornamentation recalling the zigzags and curves characteristic of the Zuñi and Tesuke pottery of Arizona and New Mexico. It was in the main island, often called Hondo, that the history of Japan began. Not more than two or three centuries probably before the compilation in the eighth century of the Kojiki, the oldest extant document in Japanese literature, a colony of Ural-Altaic origin occupied the broad plain that extends from the northern shores of the Japanese Mediterranean to the foot of the Kiyoto hills. Tradition points to previous settlements of the strangers on the southern islands, whither, pushed by some Central Asian stress from their former home in the Korean peninsula, they had wandered across the narrow waters that separate the Land of Freshness from the Land of Dawn. The new-comers did not easily subdue the Aino tribes, remnants of whom in the north and east still existed, when Yoritomo was created Barbarian-beating Generalissimo in the thirteenth century. More or less amalgamation took place between conquerors and conquered, but the former did not wholly lose their purity of blood, and, to this day, broad physical differences distinguish the peasantry from the more aristocratic strata of the population—differences amply and graphically rendered in the innumerable drawings of Hokusai. These founders of the Japanese State, which, despite the assertions of native writers, can boast of no high antiquity, were a simple folk, living principally on fish and the produce of the chase, clothed in hemp and cloth made of broussonetia bark, and dwelling in wattled huts roofed with bark and reeds. It was not until they were touched by Chinese civilisation that they entered upon the evolutionary course which has ended in a somewhat naïve preference of the civilisation of the West.

There is a difference between symbolism, which all races of men have practised, and art. The reindeer and mammoth drawings of the Cave-men show that a faculty of correct and even spirited drawing was developed at a very early stage

in man's history. But the art, like the civilisation, of Europe cannot be traced to the Cave-men; both are a heritage from the Greeks, distributed westwards by Rome. Nor was Greece itself other than an apt soil for the development of seeds brought from Egypt. Who that has gazed upon the wall-paintings of the tomb of Ti at Sak-karah, or has seen the wonderful wooden statue at Boulak, known as the Shékh-el-Beled, or the sculptures on the sandstones of Wady Mughara, or the figures cut on the obelisk of Heliopolis, can doubt that the men who did these works, full of truth, grace, and vigour, were the worthy foregoers of the sculptors of Greece and the painters of Italy? As the message of Greek art was borne by Rome to the West, so was it carried by the Macedonian conqueror to the northern frontiers of India, where the Buddhists of the Punjab countries pressed it eagerly into the service of their religion. In the sculptures of the monasteries of Yusufzai (Swat frontier of the Punjab) brought to light by Major Cole, R.E., and admirably photographed in the magnificent publication of the Indian Government issued under the title "Preservation of the National Monuments of India," this Græco-Buddhic art is amply exemplified, and most interesting it is to trace in these remains both the reposeful strength which the mobile Greek admired, and the vigorous action which pleased the contemplative Asiatic. Among the most striking of the sculptures are a figure of Maya being borne to the Trayastrinsha heaven, recalling, and probably suggested by, the work of Leochares (B.C. 365) known as "Ganymede carried off by Jupiter's Eagle," the figure of Prince Siddhartha before he left home to become a mendicant, and the wonderful group representing the death of the Buddha, with the face of Devadatta full of evil glee behind the couch. The best Buddhistic works of China or Japan, in comparison with these remains of early Græco-Buddhic art, are merely feeble grotesques, in which the majesty and grace of the prototypes have degenerated into strained pose and gesture and the lifeless prettiness of craftsmanship. The great gateways of the Tope at Sanchi, it may be noted *en passant*, bear a curious resemblance to the *torii* of Shinto shrines in Japan, the principal difference being the presence of a third cross-piece in the former, and the elaborate sculpture of their elements.

In the first century of our era the Buddhist apostles reached China, in the fourth they were in Korea, and in the sixth in Japan. Their art they bore with them, and used as a means of propagation of their doctrines. In the plates numbered 1, 2, 4, 8, 9, 10, and 70—the last a particularly interesting representation by the Chinese artist of the eighth century, Wu-tao-tsu, of the eight Nirvana of Buddha—the characteristics of this missionary art are well displayed, and may be instructively compared with the Yusufzai sculptures.

But even the art of Egypt had its birthplace elsewhere than in the Nile Valley. Recent investigations of the earliest monuments tend to prove, as Mr. Bertin has lately shown, that the Egyptians were not of a Semitic, but of an Equatorial African, stock. Mr. Bertin advances also good grounds for supposing that the Bushmen of South Africa, whose rock-paintings every traveller who has seen them has extolled for their faithfulness and vigour, came of the same or an allied stock. The Bush-

men are by no means a degraded, though a stunted, race. They have no kinship with the Negro or even with the Bantu races. Their skulls are well-formed and free from prognathism, and their meagre physique may perhaps be due to the hardship they endured in their secular wanderings over the vast deserts that intervene between the equator and the tracts to the north of the Cape Colony. A psychological connection is thus established between South Africa and the Far East which is worthy of being more fully investigated. There are many facts which tend to add force to this theory, startling though it may appear, which I have no space to dwell upon. I may, however, cite the analogy which seems to exist between the Bushman clicks and the Chinese tones, the former having a similar relation to consonantal to that which the latter possess to vocalic sounds.

Up to the middle of the last century the Chinese school of painting, more or less directly developed from Buddhistic art, held sway in Japan. Its history and the modifications it underwent in the latter country are admirably set forth by Mr. Anderson, and to his account I must refer the reader. About the period referred to a sort of revolt took place in Japan against Sinicism generally. The great Shinto revivalists, Mabuchi, Motōori, and Hirata, scouted Buddhism and Confucianism with equal emphasis. There is a quaintness in their logic which is not unamusing. Motōori, for instance, defends the Shinto lack of a moral code by the answer that the very possession of a moral code was a badge of inferiority, proving as it did the need of it, a need which Japan did not feel, as the people had merely to obey the Mikado, the direct descendant of the Sun Goddess, to be assured of their righteousness. While this religious renaissance was preparing the way for the return of the Mikado to power, a sort of Giottesque revolution took place in art: classicism was, though only partially, abandoned, and a Realistic school (*ukiyo-e*) came into existence, of which the master spirit was Hokusai, who died at the age of ninety in 1849. In the *Hiyaku shō den* (the Hundred Heroes) are sketches made by him at the age of eighty-eight. The *ukiyo-e* school was that of Japanese art *par excellence*, to a very considerable degree freed from Chinese trammels, and full of the lively and mobile spirit of the people. Mr. Anderson gives a good account of it, but hardly so full as it merits. Nor is it adequately represented in the present instalment, though doubtless it will be so in the complete work. The woodcut, after a drawing by Hokusai, called "The Maniac" (Pl. 37) is a fine example of his fluent drawing and skill and breadth in composition. The last is to me by far the most interesting phase of Japanese art. So it was to Motōori, whose very sensible observations on the subject have recently been translated by that excellent scholar, Mr. Basil Hall Chamberlain (*Tr. As. Soc. Jap.*, vol. xii. p. 223). To Sinico-Japanese art, Motōori, though an enthusiastic patriot, preferred Chinese art, especially the finished pictures of the Chinese, and their rapid drawings of birds, flowers, fish, insects, and the like, and again I share his opinion.

The *ukiyo-e* style may indeed justly be regarded as the highest expression of the art of the furthest East. Its limitations are sufficiently obvious and not without interest. The quite childish drawing of quadrupeds is singular. The Japanese artists could draw them well

enough when they chose. In one of the volumes of that interminable romance, the "Satomi Hakkenden"—there are more than fifty volumes—there is a splendid sketch of a bull, the wild boar is not seldom vigorously delineated, and Mr. Anderson gives a spirited and fairly correct drawing of a deer (Pl. 31). The explanation probably is that quadrupeds did not interest the Eastern artist, the chase, save of the wild boar, was little in vogue, and rather discouraged by Buddhism. The human face was regarded generally as a mere accessory, and conventionally rendered. There were exceptions: Kikuchi Yosai drew faces vigorously, though even he seemed to limn a profile with difficulty, and the portrait-sculptors of the seventeenth century displayed considerable power. No attempt whatever seems to have been made to portray human beauty of face or form, and the renderings of female beauty are insipid in the extreme, as well seen in the sketch of an ancient hetaira, somewhat truculently called "Hell" Reigan (Pl. 41). The stronger emotions, however, are delineated with a power that would have delighted Darwin, exemplifying admirably his descriptions of the modes of facial expression of the passions of anger, fear, despair, and horror. In some of the novel-illustrations I have seen disdain, reflection, and slyness admirably portrayed. But the softer sentiments are either not depicted at all, or depicted after a purely conventional fashion. The Turanian countenance is not expressive, save of the stronger emotions. A curious mode of portraying anger is to paint streaks of red round the eyes and along the principal lines of expression, nor is the device altogether ineffectual. The Japanese flush with anger, but not with shame; indeed, the feeling of shame they seem to possess but in a minor degree. In some other particulars their modes of expression are peculiar. They nod assent (*unadzuki*), but do not shake their head in dissent. They talk without gestures and with little emphasis of accent, but with curious changes of note and intonation. They never kiss; mothers even do not kiss their children, and they have singularly few terms of endearment. By way of compensation they have few terms of abuse, and no oaths. Their individuality is small, reflected in the curious impersonality of their language (see some excellent remarks on this characteristic by Mr. Aston, *Tr. R. As. Soc.*, vol. xii.); every Japanese is through life a member of a family, or, if a head of a family, a member of some guild or fraternity; he never "paddles his own canoe." Thus may be explained, in great measure, their neglect of humanity in art.

On a future occasion I trust to be allowed to offer a few more remarks on some points in connection with the art of Japan that seem to me interesting in relation to it as a phase in human history. Meanwhile I must not omit a recognition, not the less hearty because necessarily brief, of the value of Mr. Anderson's labours, the extent of which my own studies enable me to appreciate. This is not the place to enlarge upon the artistic merits of his work; they have been, or will be, sufficiently appreciated elsewhere. But the stores of folklore he has gathered together form a contribution to our scientific knowledge of man of extreme importance, and his account of the development of Japanese art is as interesting as it is instructive. The present instalment is admirably got up, and the illustrations, particularly the chromolithographs

by Greve of Berlin, are of unsurpassed excellence. Altogether the work promises to be of equal interest and value to the student of man and society, to the lover of art, and to the collector of Oriental curiosities.

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#### THE EVOLUTION OF THE PHANEROGAMS

*L'Évolution des Phanérogames.* Par MM. Saporta et Marion. Second Notice. (Paris: Alcan, Boulevard St. Germain, 1885.)

IN our previous notice (vol. xxxii. p. 289) of this important work we traced the evolution of gymnosperms down to a certain point. Prof. Williamson soon afterwards communicated the chief point of difference between his views and those of our authors, in a very interesting letter (*NATURE*, vol. xxxii. p. 364). We were not able at the time to follow the subject farther, and this was of less consequence, as the points at issue, though extremely important in themselves, are not claimed to be in the direct line of evolution of the existing phanerogams. The palæozoic heterosporous cryptogams, with exogenous stems, are chiefly interesting, from the evolutionary standpoint, for the light they throw on what must probably have been the structure of the common ancestors, from which they, as well as the gymnosperms, were derived. A *résumé* of what is known regarding the ancestry of the Eocene Coniferae will shortly be published by the Palæontographical Society, the compilation of much of which has been directly assisted by Prof. Williamson himself, and has also been revised in part by Mr. Carruthers. As it is not claimed by Saporta and Marion in any way that angiosperms have been evolutionised from gymnosperms, even through the Gnetaceae, it is unnecessary to pursue that branch of the subject farther now. The interest of the work centres, in fact, in the attempt to trace the ancestry of the monocotyledons and dicotyledons, groups which to ordinary observers seem to appear with startling abruptness in the geological record.

The differentiation of angiosperms, no less than gymnosperms, originally took place, it would appear, in pre-Carboniferous times, the ancestral forms common to both being heterosporous cryptogams, destitute of exogenous wood. The fundamental difference at starting seems to be that, in the gymnosperms, one of the macrospores contained in the ovule immediately absorbs all the rest, enabling their evolution to proceed with rapidity; while in the angiosperms there is a period of struggle among the macrospores before one finally obtains the advantage and obliterates its fellows. Want of space renders it impossible to give any account of the steps by which the authors have traced out this process. The common source, at a remote period, of the monocotyledons and the dicotyledons, is assumed from the fact that the early stages of the development of the embryo, in some of the former, approach nearer to dicotyledons than to plants of their own class. Moreover, the essential organs, the carpels, stamens, petals, and the fruits, are sufficiently analogous to indicate a common origin. The problem attempted is to reconstruct the "pro-angiospermic" stage whence these two opposite lines have issued. The fully-developed leaves of monocotyledons and dicotyledons embrace many varieties, from the most simple to others